

REMARKS

I. Introduction

In response to the pending Office Action, Applicant has amended claim 1 to further clarify the subject matter of the present invention. The limitations of claim 20 have been incorporated into claim 1. Applicant has cancelled claim 20, without prejudice. Support for the amendment to claim 1 may be found, for example, in original claim 20 and Table 1 of the specification. No new matter has been added.

Applicants appreciate the granting of an interview with the supervisor on December 29, 2006 in which the supervisor clarified the Examiner's request for information to be submitted in a declaration in order to support the claimed invention with regard to the superiority of HEPES buffer as compared to other buffers for use in a method for producing a cobalt-protein complexes.

For the reasons set forth below, Applicant respectfully submits that all pending claims are patentable over the cited prior art.

II. The Rejection Of Claims 1, 20-24 And 26 Under 35 U.S.C. § 103

Claims 1, 20-24 and 26 are rejected under 35 U.S.C. §103(a) as being unpatentable over Douglas et al. (*Inorg. Chem.*, **2000**, 39, 1828-30) in view of Yang et al. (*Biochem. J.*, **1999**, 338, 615-618). Applicant respectfully traverses this rejection for at least the following reasons.

With regard to the present invention, claim 1 discloses a method for producing a cobalt-protein complex comprising: the step a) of preparing a solution including Co²⁺ ions, a protein, and HEPES, and having a pH of not less than 8.0 and not more than 8.8; and a step b) of adding

an oxidizing agent to the solution and thereby making the protein contain particles composed of cobalt, wherein the protein is apoferritin, the concentration of the Co^{2+} ions is not less than 2.5 mM and not more than 5.0 mM, the pH of the solution is adjusted to be not less than 8.0 and not more than 8.8 when the concentration of the Co^{2+} ions is not less than 2.5 mM and not more than 3.5 mM, the pH of the solution is adjusted to be not less than 8.0 and not more than 8.4 when the concentration of the Co^{2+} ions is more than 3.5 mM and not more than 4.0 mM, and the pH of the solution is adjusted to be not less than 8.0 and not more than 8.2 when the concentration of the Co^{2+} ions is more than 4.0 mM and not more than 5.0 mM.

In contrast to the present invention, Douglas discloses that the concentration of Co ions is 25 mM, far outside the range recited in amended claim 1. As such, Douglas fails to disclose all of the limitations of claim 1 of the present invention. The significance of this limitation is shown in Table 1, page 9 of the specification. As the concentration of Co ions is raised, the narrower the optimum pH range of the solution is, and the quality of the resulting cobalt-protein complex is reduced. At a concentration of 5 mM of Co ions, the pH of the solution must be not less than 8.0 and not more than 8.2. Therefore, the concentration of the Co ions of 25 mM is too high to obtain a cobalt-protein complex having a high quality in which the pH of the solution is not less than 8.0 and not more than 8.2.

Furthermore, Yang fails to remedy this deficiency. Yang discloses, in the description of Figs. 1, 2 and 4 on page 616-17, concentrations of FeSO_4 , and accordingly Fe ions, at 0.5 mM and 0.3 mM. Assuming that Co ions were equally substituted for Fe ions, as the Examiner has alleged, the Yang reference fails to disclose a concentration of Co ions in the range recited in claim 1 of the present invention. As a result, the Yang reference would also be unable to produce a cobalt-protein complex such as the present invention can.

In order to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 180 USPQ 580 (CCPA1974). At a minimum, as Douglas and Yang both fail to teach or suggest a method for producing a cobalt-protein complex wherein the concentration of the Co^{2+} ions is not less than 2.5 mM and not more than 5.0 mM, the pH of the solution is adjusted to be not less than 8.0 and not more than 8.8 when the concentration of the Co^{2+} ions is not less than 2.5 mM and not more than 3.5 mM, the pH of the solution is adjusted to be not less than 8.0 and not more than 8.4 when the concentration of the Co^{2+} ions is more than 3.5 mM and not more than 4.0 mM, and the pH of the solution is adjusted to be not less than 8.0 and not more than 8.2 when the concentration of the Co^{2+} ions is more than 4.0 mM and not more than 5.0 mM, it is submitted that Douglas and Yang, alone or in combination, do not render claim 1 obvious. Accordingly, it is respectfully requested that the § 103 rejection of claim 1 be withdrawn.

III. All Dependent Claims Are Allowable Because The Independent Claim From Which They Depend Is Allowable

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claim 1 is patentable for the reasons set forth above, it is respectfully submitted that all pending dependent claims are also in condition for allowance.

IV. Conclusion

Having fully responded to all matters raised in the Office Action, Applicant submits that all claims are in condition for allowance, an indication of which is respectfully solicited.

Application No.: 10/644,774

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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